

Date: Friday, 18/07/2008 1:19:59 PM  
 User: Julie Lecocq

## Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : GLARESHIELD  
 Job Number : 40664  
 Estimate Number : 13288  
 P.O. Number :  
 This Issue : 18/07/2008 S.O. No. :  
 Prsht Rev. : NC Part Number : D36901  
 First Issue : / / Type : THERMOFORMING Drawing Number : D3690 REV B  
 Previous Run : 38869 Drawing Revision : B  
 Written By : Due Date : 08/08/2008 Qty: 2 Um: Each  
 Checked & Approved By : 240 08.7.18  
 Comment : Est Rev A New Issue 08/04/28 DL verified by:DD  
 Est Rev:B 08-07-14 revB as per dwg DD verified by:ec

## Additional Product

Job Number:



Seq. #:

Machine Or Operation:

Description :

1.0

MLEXS093F600602

GE PLASTICS LEXAN SHEET



Comment: Qty.: 26.3110 sf(s)/Unit Total: 52.6220 sf(s) ~ 24.91 sq ft/unit 69x52.  
 GE PLASTICS LEXAN SHEET  
 batch: M106751

2.0

HAND FINISH TH

HAND FINISHING THERMOFORMING



Comment: HAND FINISHING THERMOFORMING

1) Cut Blanks to fit frame size 69.5" X 35.5"

Ok. 08.07.22

x3

3.0

THERMOFORMING

THERMOFORMING MACHINE



Comment: THERMOFORMING MACHINE

Thermoform as per Dwg. D3690-1 and Folio FTA 019

Dwg. Rev. BFolio Rev. A

Ok- 08.07.22.

4.0

QC2

INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

Visually inspect for proper formation of each part

Ok 08.07.22.

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

| NCR: |      | WORK ORDER NON-CONFORMANCE (NCR) |                             |                                 |                |                           |                       |                          |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC<br>Section A   | Corrective Action Section B |                                 |                | Verification<br>Section C | Approval<br>Chief Eng | Approval<br>QC Inspector |
|      |      |                                  | Initial<br>Chief Eng        | Action Description<br>Chief Eng | Sign &<br>Date |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |
|      |      |                                  |                             |                                 |                |                           |                       |                          |

**NOTE:** Date & initial all entries

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: GLARESHIELD

Job Number: 40664

Part Number: D36901

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

QC8

SECOND CHECK



08.08.26

(2)



Comment: SECOND CHECK

6.0

HAND FINISH TH

HAND FINISHING THERMOFORMING



Comment: HAND FINISHING THERMOFORMING

1) Trim to Finished Dimensions as per dwg D3690

D79043

BB 08/07/29 x3

7.0

QC2

INSPECT PARTS AS THEY COME OFF MACHINE



PTO →

Comment: INSPECT PARTS AS THEY COME OFF MACHINE

Check dimensions to ensure conformity to drawing tolerances.

DL 08/07/29 x3

8.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

9.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: GA

SB 08/09/09 (2)

10.0

QC21

FINAL INSPECTION/W/O RELEASE



08/09/10

Comment: FINAL INSPECTION/W/O RELEASE

Job Completion




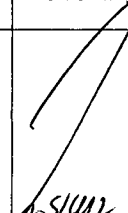
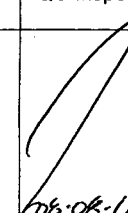


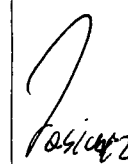
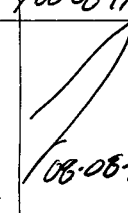


MF 08-09-10

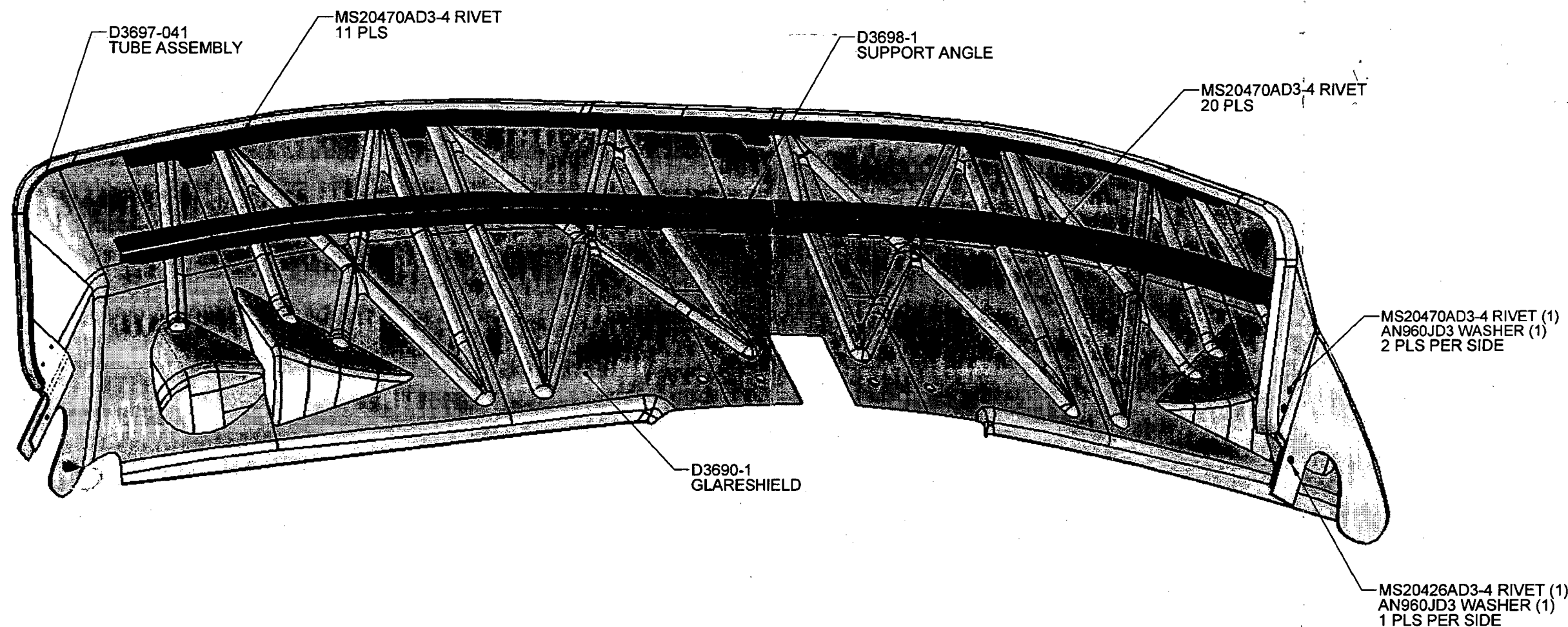
# Dart Aerospace Ltd

| W/O: |      | WORK ORDER CHANGES |    |      |     |                                     |                          |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE   | By | Date | Qty | Approval<br>Chief Eng /<br>Prod Mgr | Approval<br>QC Inspector |
|      |      |                    |    |      |     |                                     |                          |
|      |      |                    |    |      |     |                                     |                          |

Part No: D3690-1 PAR #: WIK Fault Category: Prod / Thermforming NCR ☒ Yes No DQA: D Date: 08/09/10  
D3690-041 QA: N/C Closed: 1D Date: 08/09/11  
D412-776-011

| NCR: <u>40664</u> |      | WORK ORDER NON-CONFORMANCE (NCR)  |   |   |  |   |   |   |
|-------------------|------|---|---|---|--|---|---|---|
| DATE              | STEP | Description of NC<br>Section A  | Corrective Action Section B   |   |  | Verification<br>Section C   | Approval<br>Chief Eng   | Approval<br>QC Inspector  |
|                   |      |   | Initial<br>Chief Eng  | Action Description<br>Chief Eng   | Sign &<br>Date   |   |   |   |
| 08.07.09          | 7    | Small Tear in<br>1 unit caused by<br>porting. R.C. Corner was<br>too tight on the<br>mold.                                      |   | "Scrap unit".<br>Repair tool to<br>part easier.                               | 08.07.09<br> |   |   |   |
| 08-08-26          | 6-0  | 1 part had a larger cut<br>wt in the 2.2" section.<br>R.C: Tool got away on the<br>employee: cut too deep in to<br>the material |  | Acceptable to cut within<br>the slot to 2.5 per<br>attached E-mail<br>detail. | WIK<br>08.08.26  |  |  |  |
|                   |      |   |   |   |  |   |   |   |

NOTE: Date & initial all entries



# PART LIST

| QTY<br>-041 | PART NUMBER  | DESCRIPTION               |
|-------------|--------------|---------------------------|
| X           | D3690-041    | GLARESHIELD ASSEMBLY      |
| 1           | D3690-1      | GLARESHIELD               |
| 1           | D3697-041    | TUBE ASSEMBLY             |
| 1           | D3698-1      | SUPPORT ANGLE             |
| 6           | AN960JD3     | WASHER (OR NAS1149DN332J) |
| 2           | MS20426AD3-4 | RIVET                     |
| 35          | MS20470AD3-4 | RIVET                     |

## D3690-041 GLARESHIELD ASSEMBLY

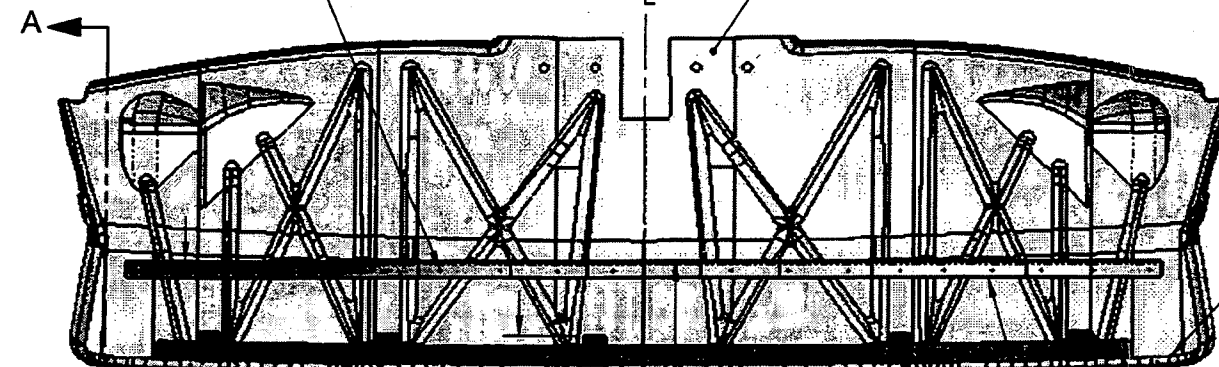
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WORK ORDER  
NO. 40604

RELEASED  
08.07.04

| B          | ADD FINISH COAT & 1.0 TYP. SHEET 2 ZONES A,8 & C,5;<br>ADD MIN THICKNESS. SHEET 3 ZONE A,8 | RF  | 08.06.24     |
|------------|--|---|--------------|
| A          | NEW ISSUE  | RF  | 08.05.26     |
| REV.       | DESCRIPTION  | BY  | DATE         |
| DESIGN     | RF   | <b>DART AEROSPACE LTD</b><br>HAWKESBURY, ONTARIO, CANADA  |              |
| DRAWN      | RF   |   |              |
| CHECKED    | RF   | DRAWING NO.   | REV. B       |
| MFG. APPR. | RF   | D3690   | SHEET 1 OF 3 |
| APPROVED   | RF   | TITLE   | SCALE        |
| DE APPR.   | RF   | GLARESHIELD ASSEMBLY  | NTS          |
| DATE       | 08.06.24   | <small>COPYRIGHT © 2008 BY DART AEROSPACE LTD<br/> THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS<br/> NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT<br/> WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small> |              |

TRANSFER DRILL  $\phi 0.098$   
(#40 DRILL) FROM  
D3698-1 TO D3690-1  
INSTALL  
MS20470AD3-4 RIVET (20, REF)  
RIVET HEAD ON GLARESHIELD  
OUTSIDE SURFACE

D3690-1  
GLARESHIELD  
REF



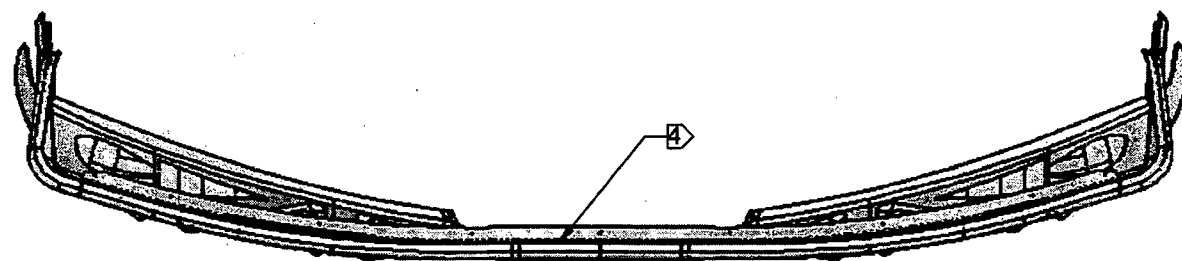
D3697-041  
TUBE ASSEMBLY  
REF

TRANSFER DRILL  $\phi 0.144$   
(#27 DRILL) AT THIS LOCATION  
FROM D3697-041 TO D3690-1  
(NO HARDWARE INSTALLED)

D3698-1  
SUPPORT ANGLE  
REF

TRANSFER DRILL  $\phi 0.098$   
(#40 DRILL) FROM  
D3697-041 TO D3690-1  
INSTALL  
MS20470AD3-4 RIVET (11, REF)  
RIVET HEAD ON GLARESHIELD  
OUTSIDE SURFACE

EQUAL DIMENSION  
AT BOTH ENDS



### D3690-041 GLARESHIELD ASSEMBLY

#### NOTES:

- 1) CENTER D3697-041 AND D3698-1 ON TO D3690-1
- 2) FINISH: PAINT D3690-041 ASSY FLAT BLACK USING BASF GLASURIT 22 LINE CODE SFA39.50 PER DART QSI 005 4.2
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) IDENTIFICATION: ETCH WITH DART P/N D3690-041 & B/N ON INSIDE OF PART
- 5) WEIGHT: 2.98 lbs
- 6) MASK HATCHED AREAS (6 PLS) ON INSIDE OF THE PART PRIOR TO PAINTING

TRANSFER DRILL  $\phi 0.098$   
(#40 DRILL) FROM  
D3697-041 TO D3690-1  
INSTALL  
MS20426AD3-4 RIVET (1, REF)  
AN960JD3 WASHER (1, ON GLARESHIELD  
OUTSIDE SURFACE)  
1 PER SIDE

0.14  
REF

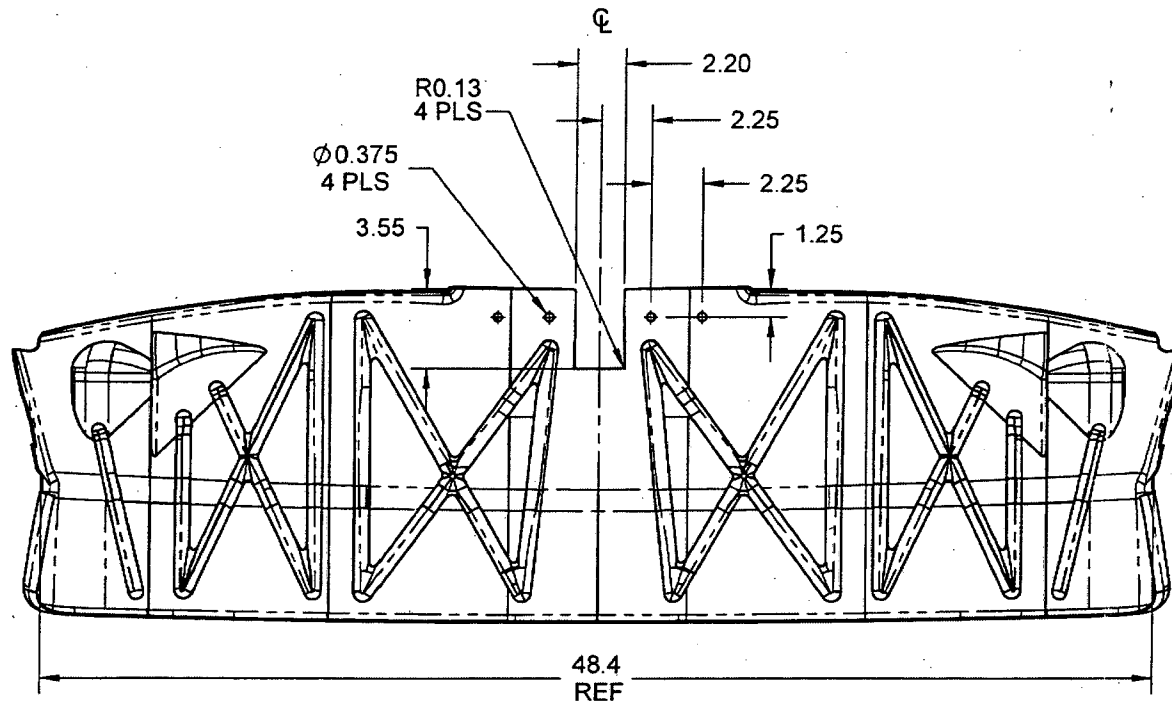
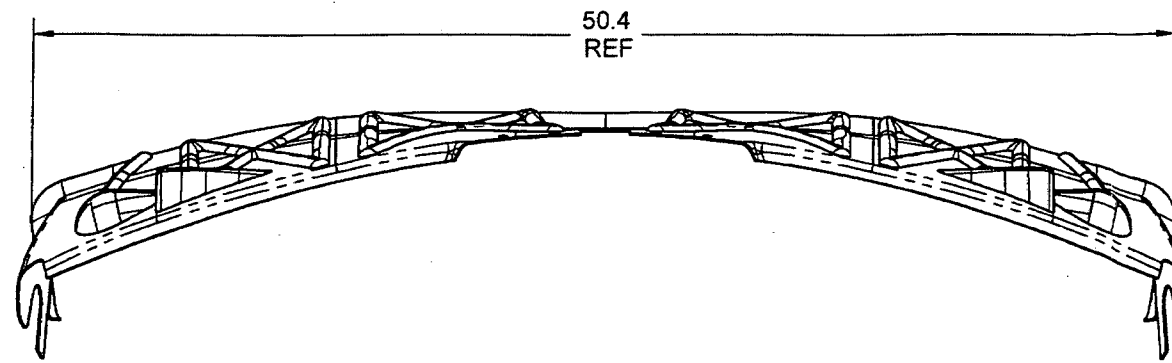
TRANSFER DRILL  $\phi 0.098$   
(#40 DRILL) FROM  
D3697-041 TO D3690-1  
INSTALL  
MS20470AD3-4 RIVET (1, REF)  
AN960JD3 WASHER (1, ON GLARESHIELD  
OUTSIDE SURFACE)  
2 PER SIDE

#### SECTION A-A

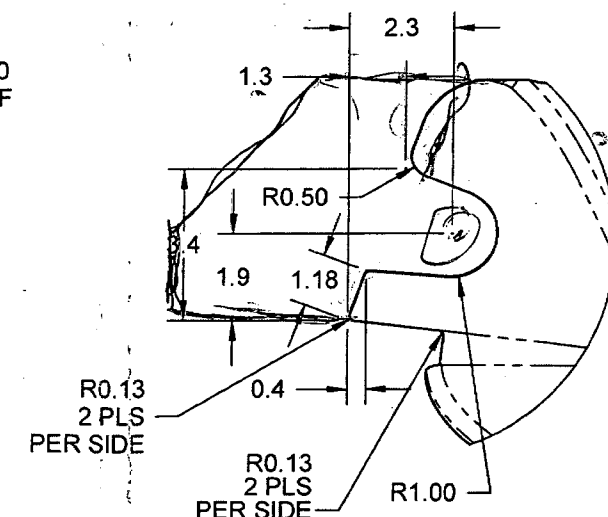
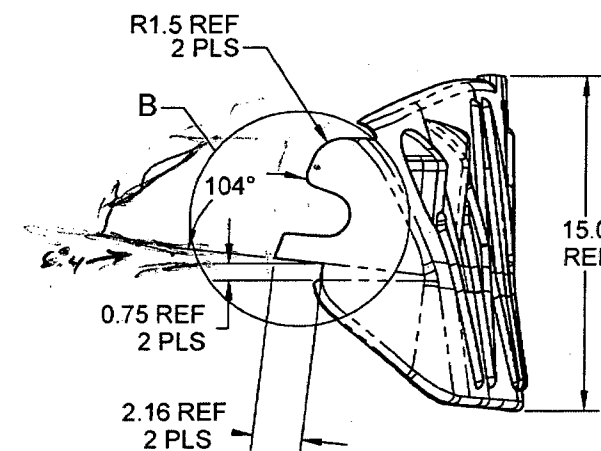
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68-07-05

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NO. 40664

|            |          |  |              |
|------------|----------|--|--------------|
| DESIGN     | RF       | <b>DART AEROSPACE LTD</b>  |              |
| DRAWN      | RE       | HAWKESBURY, ONTARIO, CANADA  |              |
| CHECKED    | JP       | DRAWING NO.<br><b>D3690</b>  | REV. B       |
| MFG. APPR. | JP       | SHEET 2 OF 3   |              |
| APPROVED   | JP       | TITLE<br><b>GLARESHIELD ASSEMBLY</b>   | SCALE<br>NTS |
| DE APPR.   | JP       | COPYRIGHT © 2008 BY DART AEROSPACE LTD   |              |
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**D3690-1 GLARESHIELD**



DETAIL B  
2 x SCALE  
ALL REF DIMENSION  
**RELEASED**  
08.06.24

**NOTES:**

- 1) MATERIAL: F6006 SUEDE/POLISHED 701 BLACK FLAT LEXAN SHEET 0.093 THICK  
(REF DART SPEC MLEXS.093-F6006-02)
- 2) TOOLING: THERMOFORM PER MOLD DT9010 PER QSI 022  
TRIM PER MOLD SCRIBE LINES EXCEPT WHERE NOTED
- 3) FINISH: NONE
- 4) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 5) UNITS: INCHES UNLESS OTHERWISE NOTED
- 6) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 7) IDENTIFICATION: NONE
- 8) WEIGHT: 2.5 lbs
- 9) MINIMUM THICKNESS AFTER FORMING IS 0.040



|            |          |  |              |
|------------|----------|--|--------------|
| DESIGN     | RF       | <b>DART AEROSPACE LTD</b><br>HAWKESBURY, ONTARIO, CANADA   |              |
| DRAWN      | RE       |  |              |
| CHECKED    |          | DRAWING NO.  | REV. B       |
| MFG. APPR. |          | <b>D3690</b>   | SHEET 3 OF 3 |
| APPROVED   |          | TITLE  | SCALE        |
| DE APPR.   |          | <b>GLARESHIELD ASSEMBLY</b>  | NTS          |
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NO. 42664

|                              |              |             |
|------------------------------|--------------|-------------|
| DART AEROSPACE LTD           | WORK ORDER:  | 40664 #2    |
| Description:                 | Part Number: | D3690-1     |
| Inspection Dwg: D3690 Rev: B |              | Page 1 of 1 |

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

(Step 4) Thermoforming  
Visual Inspection Sign-off

| Description                                       | Initials |
|---|----------|
| Acceptable shape definition                       | 196      |
| Free of visual flaws (bumps, cracks, voids, etc.) | 196      |
|   |          |
|   |          |

### (Step 6) Trimming FAI Checklist

Inspect dimensions highlighted on inspection sheet drawing D3690 Rev. B and record below

| Drawing Dimension       | Tolerance | Actual Dimension | Accept | Reject | Method of Inspection | Comments           |
|-------------------------|-----------|------------------|--------|--------|----------------------|--------------------|
| 2.20" Back cutout width | 0.030     | 2.25             | ✓      |        | vern.                | Per attached email |
| 3.55" Back cutout depth | 0.030     | 3.55             | ✓      |        | vern.                |                    |
| Min 0.040"              | Min.      | 0.055            | ✓      |        | Mic                  |                    |
|                         |           |                  |        |        |                      |                    |
|                         |           |                  |        |        |                      |                    |
|                         |           |                  |        |        |                      |                    |
|                         |           |                  |        |        |                      |                    |

|                         |                                |                                |
|-------------------------|--------------------------------|--------------------------------|
| Measured by: <u>dh.</u> | Audited by: <u>[Signature]</u> | Prototype Approval: <u>N/A</u> |
| Date: <u>08.02.29</u>   | Date: <u>08.08.26</u>          | Date: <u>N/A</u>               |

| Rev | Date | Change    | Revised by | Approved |
|-----|------|-----------|------------|----------|
|     |      | New Issue |            |          |



|                              |              |             |
|------------------------------|--------------|-------------|
| DART AEROSPACE LTD           | WORK ORDER:  | 40664 #1    |
| Description:                 | Part Number: | D 3690-1    |
| Inspection Dwg: D3690 Rev: B |              | Page 1 of 1 |

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article    ☐ Prototype

(Step 4) Thermoforming  
Visual Inspection Sign-off

| Description                                       | Initials |
|---|----------|
| Acceptable shape definition                       | Oh       |
| Free of visual flaws (bumps, cracks, voids, etc.) | Oh       |
|   |          |
|   |          |

### (Step 6) Trimming FAI Checklist

Inspect dimensions highlighted on inspection sheet drawing D3690 Rev. B and record below

| Drawing                 | Tolerance | Actual    | Accept | Reject | Method of  | Comments |
|-------------------------|-----------|-----------|--------|--------|------------|----------|
| Dimension               |           | Dimension |        |        | Inspection |          |
| 2.20" Back cutout width | 0.030     | 2.2       | ✓      |        |            |          |
| 3.55" Back cutout depth | 0.030     | 3.55      | ✓      |        |            |          |
|                         |           |           |        |        |            |          |
|                         |           |           |        |        |            |          |
|                         |           |           |        |        |            |          |
|                         |           |           |        |        |            |          |
|                         |           |           |        |        |            |          |

|              |          |
|--------------|----------|
| Measured by: | DL       |
| Date:        | 08.07.29 |

|             |             |
|-------------|-------------|
| Audited by: | [Signature] |
| Date:       | 10.08.26    |

|                     |  |
|---------------------|--|
| Prototype Approval: |  |
| Date:               |  |

| Rev | Date | Change    | Revised by | Approved |
|-----|------|-----------|------------|----------|
|     |      | New Issue |            |          |

## Mike Petsche

---

To: David Shepherd  
Subject: RE: Emailing: IMG\_1026.jpg

-----Original Message-----

From: David Shepherd [mailto:dshepherd@dartaero.com]  
Sent: Wednesday, July 23, 2008 9:58 AM  
To: 'Chris Provencal'  
Cc: 'Mike Petsche'; 'Peter Hum'  
Subject: RE: Emailing: IMG\_1026.jpg

I am OK with the cutout being slightly wider as long as we don't run into an edge distance problem with the 4 holes that have to be drilled in that vicinity to attach the glareshield to the underlying support structure. If the edge distance looks good, go ahead and accept the modified (symmetric) glareshield.

David

-----Original Message-----

From: Chris Provencal [mailto:cprovencal@dartaero.com]  
Sent: Tuesday, July 22, 2008 1:29 PM  
To: 'David Shepherd'  
Cc: Mike Petsche; Peter Hum  
Subject: Emailing: IMG\_1026.jpg

David,

Qty(1) D3690-1 Glareshield. The cutout for the center window post, there is a 0.20" deep cut on one side of the cut-out (see pic) from the cutting tool going past the cutline. The cutout width is currently to dwg (2.20" wide). We can widen the cutout by about 0.20" on either side (make it symmetrical), so the final width would likely be around 2.50"-2.60" wide.

Alternately, Daryl suggested we could fill the cutout with putty because we're painting it after.

I have no QSI 042 delegation for thermoformed parts (fyi: I know Peter is always looking for more delegation). What do you think?

-Chris

No virus found in this incoming message.

Checked by AVG.

Version: 7.5.524 / Virus Database: 270.5.4/1566 - Release Date: 7/22/2008 6:00 AM

No virus found in this outgoing message.

Checked by AVG.

Version: 7.5.524 / Virus Database: 270.5.5/1569 - Release Date: 7/23/2008 1:31 PM

No virus found in this outgoing message.

Checked by AVG.